

Claims:

1. A device 101 for thermal management of an LED 120, said device comprising:
 - a heatsink 160;
 - a substrate 111 overlying said heatsink 160;
 - a trace layer 130 overlying said substrate 110; and
 - a via 180 extending through said substrate 111, wherein said via 180 is in thermal communication with said trace layer 130 and said heatsink 160 to transfer to said heatsink 160 at least a portion of any heat applied to said trace layer 130 by said LED 120.
2. The device of claim 1, further comprising:
 - a bonding layer 170 between said substrate 110 and said via 180.
3. The device of claim 2, wherein said bonding layer 170 is a thermally conductive adhesive.
4. The device of claim 2, wherein said bonding layer 170 is a thermally conductive tape.
5. The device of claim 1, wherein said substrate 111 is a multi-layered substrate 112.
6. The device of claim 1, wherein said substrate 111 is a printed circuit board.
7. The device of claim 1, wherein said substrate 111 is a flexible substrate.
8. The device of claim 1, wherein said via 180 includes:
 - a sidewall 182 defining a channel 181 through said substrate 110, said channel 181 interfacing with said trace layer 130 to thereby establish the thermal communication between said via 180 and said trace layer 130.
9. The device of claim 8, further comprising:
 - a thermal conductive material filling at least a portion of said channel 181.

10. The device of claim 1, wherein said via 180 includes:
a sidewall 182 defining a channel 181 through said substrate 110, said channel 181 interfacing with said heat sink 180 to thereby establish the thermal communication between said via 180 and said heat sink 180.
11. The device of claim 10, further comprising:
a thermal conductive material filling at least a portion of said channel 181.
12. A device 101 for thermal management of an LED 120, said device comprising:
a heatsink 160;
a trace layer 130; and
a flexible substrate 111 in thermal communication with said trace layer 130 and said heatsink 160 to transfer to said heatsink 160 any heat applied to said trace layer 130 by said LED 120.
13. The device of claim 12, further comprising:
a via 180 extending through said substrate 111, wherein said via 180 is in thermal communication with said trace layer 130 and said heatsink 160 to enhance the transfer to said heatsink 160 of any heat applied to said trace layer 130 by said LED 120.
14. The device of claim 13, wherein said via 180 includes:
a sidewall 182 defining a channel 181 through said substrate 110, said channel 181 interfacing with said trace layer 130 to thereby establish the thermal communication between said via 180 and said trace layer 130.
15. The device of claim 14, further comprising:
a thermal conductive material filling at least a portion of said channel 181.
16. The device of claim 13, wherein said via 180 includes:
a sidewall 182 defining a channel 181 through said substrate 110, said channel 181 interfacing with said heat sink 180 to thereby establish the thermal communication between said via 180 and said heat sink 180.

17. The device of claim 16, further comprising:
a thermal conductive material filling at least a portion of said channel 181.
18. A device 101 for thermal management of an LED 120, said device comprising:
a heatsink 160;
a substrate 111 overlying said heatsink 160;
a trace layer 130 overlying said substrate 110; and
a via 180 including a sidewall 182 defining a channel 181 extending through said substrate 110, wherein said channel 181 is beneath said trace layer 130 and above said heatsink 160 to transfer any heat applied to said trace layer 130 by said LED 120 to said heatsink 160.
19. The device of claim 18, further comprising:
a thermal conductive material filling at least a portion of said channel 181.
20. The device of claim 18, further comprising:
a bonding layer 170 between said substrate 110 and said via 180.